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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/690,580 | 10/23/2003 | Yukio Shakuda | KAW 105 | 5970 |
| 23995 | 7590 | 05/05/2005 | EXAMINER | |
| RABIN & Berdo, PC 1101 14TH STREET, NW SUITE 500 WASHINGTON, DC 20005 | | | TRAN, LONG K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2818 | |

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,580

Applicant(s)

SHAKUDA ET AL.

Examiner

Long K. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,7 and 8 is/are rejected.
- 7) ☒ Claim(s) 2-6 and 9-11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/23/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed on October 23, 2003.

Information Disclosure Statement

2. This office acknowledges of the following items from the Applicant:

Information Disclosure Statement (IDS) filed on October 23, 2003.

The references cited on the PTO -1449 form have been considered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by the Applicant Admitted Prior Art (AAPA).

4. Regarding claim 1, the AAPA discloses a semiconductor comprising:

A semiconductor layered portion having light emitting layer forming portion 3 (fig.

4):

a conductive substrate 1 (fig. 4); and

a metal layer 2 (fig. 4) for adhering said semiconductor layered portion to said conductive substrate,

wherein said metal layer includes at least a first metal layer 2a (fig. 4) for making ohmic contact with said semiconductor layered portion, a second metal layer 2b

essentially consisted of Ag (page 2, lines 14 and 15), and a third metal layer 2c (fig. 4) made of a metal which allows to adhere to said conductive substrate and said portion.

The AAPA does not explicitly disclose the third metal layer adhering to the semiconductor layered portion at a low temperature. However this limitation is taken to be a product by process limitation, it is the patentability product and not of recited process steps which must be established. Therefore, when the prior art discloses a product which reasonably appears to be identical with or only slightly different than the product claimed in a product-by process claim, a rejection based on sections 102 or 103 is fair. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324,326(CCPA 1974); *In re Marosi et al.*, 218 USPQ 289,292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process " claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claim in "product by process" claim or not.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Kawamoto et al. (US Patent no. 5,982,546).

7. Regarding claim 7, the AAPA discloses the claimed invention of claim 1 except for the second metal layer contains at least Zn or Au at 10 atomic % or less, and comprises Ag at 90 atomic % or greater.

Kawamoto, shows a second metal layer 30 (fig. 4) contains gold and 99.9% or higher of silver (col. 7, lines 1 – 4)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide the second metal layer of the AAPA with the second layer containing Au and 99.9% Ag of Kawamoto, in order to provide a reflecting film retaining a reflectance of at least 90% to visible light even after the reflecting film being exposed for 300 hrs (col. 3, lines 53 – 58).

Regarding claim 8, the AAPA discloses the claimed invention of claim 1 except for the second metal layer is formed to have a thickness of from 0.1 to 0.5 μm .

Kawamoto shows a second metal layer 30 (fig. 4) with thickness of 70 nm to 300 nm (col. 6, lines 55). However, it would have been well known in the art that the selection of those parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art.

"Normally, it is to be expected that a change in **energy, concentration, temperature,**

time, molar fraction, depth, thickness, etc., or in combination of the parameters would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

Moreover, the thickness of the second metal layer has not been alleged by applicant to be of significant importance for patentability.

Allowable Subject Matter

8. Claims 2 – 6 and 9 – 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for the indication of allowable subject matter: Claims 2 – 6 and 9

11. 3 – 11 are allowable over the prior art of record because none of the prior art () whether taken singularly or in combination, especially when these limitations are considered within the specific combination claimed, to teach:

First metal layer 21 (fig. 2) having missing portion (PROTECTIVE FILM) as cited in claim 2; Ag being added to the first metal layer as cited in claim 6; the third metal layer comprising IN-Zn or Sn-Zn as cited in claim 9; and the fourth metal layer 24 (fig. 2) making ohmic contact with semiconductor substrate 1 (fig. 2) as cited in claim 10.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long K. Tran whose telephone number is 571-272-1797. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Tran



April 25, 2005



David Nelms
Supervisory Patent Examiner
Technology Center 2800